

In the Claims

Claims 1-27 (canceled)

28. (original) A flow-interrupting U-valve apparatus for connection to a discharge port of a vessel, for preventing inadvertent liquid flow from the vessel through the U-valve, comprising:

a U-valve;

a flow-interruption device within the U-valve, the flow-interruption device comprising:

a sealed chamber;

an inlet connected to a portion of the U-valve connected to the discharge port of the vessel, the inlet allowing entry of liquid into the chamber; and

an outlet connected to a section of the U-valve adapted to allow discharge of the liquid, the outlet being separate from the inlet in order to interrupt flow of liquid entering the chamber from flow of liquid exiting the chamber.

29. (original) A chemical synthesis reaction tool, comprising:

a reaction vessel;

a reaction vessel support disposed to hold the reaction vessel in a preferred orientation,

an injection port, including a pressure seal, situated to provide access to said reaction vessel for the injection of liquids into said reaction vessel;

an evacuation port, including a pressure seal, situated to provide access to said reaction vessel for the evacuation of fluids from said reaction vessel;

injection and evacuation fittings formed to matingly engage said respective injection and evacuation ports and to thereby enable the delivery of fluids to the reaction vessel and the evacuation of fluids from said reaction vessel;

a U-valve formed of flexible tubing and connected to regulate the flow of liquids from said evacuation through fitting;

a flow-interruption device within the U-valve, the flow-interruption device comprising:

a sealed chamber;

an inlet connected to a portion of the U-valve connected to the discharge port of the vessel, the inlet allowing entry of liquid into the chamber; and

an outlet connected to a section of the U-valve adapted to allow discharge of the liquid, the outlet being separate from the inlet in order to interrupt flow of liquid entering the chamber from flow of liquid exiting the chamber.

30. (original) A universal fluid exchanger comprising:

a reaction vessel;

a reaction vessel support disposed to hold the reaction vessel in a preferred orientation;

an injection port, including a pressure seal, situated to provide access to said reaction vessel for the injection of liquids into said reaction vessel;

an evacuation port, including a pressure seal, situated to provide access to said reaction vessel for the evacuation of fluids from said reaction vessel;

injection and evacuation fittings formed to matingly engage said respective injection and evacuation ports and to thereby enable the delivery of fluids to the reaction vessel and the evacuation of fluids from said reaction vessel;

an actuator for controlling selectively aligning the injection and evacuation ports and the injection and evacuation fittings, respectively; and

a U-valve formed of flexible tubing and connected to regulate the flow of liquids from said evacuation through fitting;

a flow-interruption device within the U-valve, the flow-interruption device comprising:

a sealed chamber;

an inlet connected to a portion of the U-valve connected to the discharge port of the vessel, the inlet allowing entry of liquid into the chamber; and

an outlet connected to a section of the U-valve adapted to allow discharge of the liquid, the outlet being separate from the inlet in order to interrupt flow of liquid entering the chamber from flow of liquid exiting the chamber.

Claims 31-35 (canceled)

36. (previously added) The flow-interrupting U-valve apparatus of claim 28 wherein the flow-interruption device allows liquid to flow into the chamber until the level of liquid in the chamber reaches the level of liquid in the vessel.

37. (previously added) The flow-interrupting U-valve apparatus of claim 28 wherein the flow-interruption device prevents siphoning of the liquid.

38. (previously added) The flow-interrupting U-valve apparatus of claim 28 wherein the flow-interruption device allows purging of the vessel utilizing negative pressure.

39. (previously added) The flow-interrupting U-valve apparatus of claim 28 wherein the flow-interruption device allows agitation of liquid within the vessel utilizing a passage of gas into the vessel.

40. (previously added) The flow-interrupting U-valve apparatus of claim 28 wherein the flow-interruption device allows the vessel to be evacuated utilizing suction applied to the outlet.

41. (previously added) The flow-interrupting U-valve apparatus of claim 29 wherein the flow-interruption device allows liquid to flow into the chamber until the level of liquid in the chamber reaches the level of liquid in the vessel.

42. (previously added) The flow-interrupting U-valve apparatus of claim 29 wherein the flow-interruption device prevents siphoning of the liquid.

43. (previously added) The flow-interrupting U-valve apparatus of claim 29 wherein the flow-interruption device allows purging of the vessel utilizing negative pressure.

44. (previously added) The flow-interrupting U-valve apparatus of claim 29 wherein the flow-interruption device allows agitation of liquid within the vessel utilizing a passage of gas into the vessel.

31 45. (previously added) The flow-interrupting U-valve apparatus of claim 29 wherein the flow-interruption device allows the vessel to be evacuated utilizing suction applied to the outlet.

46. (previously added) The flow-interrupting U-valve apparatus of claim 30 wherein the flow-interruption device allows liquid to flow into the chamber until the level of liquid in the chamber reaches the level of liquid in the vessel.

47. (previously added) The flow-interrupting U-valve apparatus of claim 30 wherein the flow-interruption device prevents siphoning of the liquid.

48. (previously added) The flow-interrupting U-valve apparatus of claim 30 wherein the flow-interruption device allows purging of the vessel utilizing negative pressure.

49. (previously added) The flow-interrupting U-valve apparatus of claim 30 wherein the flow-interruption device allows agitation of liquid within the vessel utilizing a passage of gas into the vessel.

50. (previously added) The flow-interrupting U-valve apparatus of claim 30 wherein the flow-interruption device allows the vessel to be evacuated utilizing suction applied to the outlet.

Claims 51-55 (canceled)